BEFORE THE UNITED STATES PATENT AND TRADEMARK OFFICE AS INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

First named inventor: Piikivi, Lauri

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Title: WIRELESS COMMUNICATION DEVICE PROVIDING A CONTACTLESS INTERFACE FOR A SMART CARD READER

Examiner: Paik, Steven S.

(Courtesy copy also sent Via Facsimile to (703) 305-3230)

RESPONSE TO WRITTEN OPINION

Mail Stop PCT, Attn: IPEA/US
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

This paper is filed in response to the Written Opinion mailed 21 July 2004.

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Signature: Sue Muro

Name: Sue Muro

In the claims: The claims are as follows.

1. (Currently amended) A mobile cellular ~~wireless~~ terminal ~~(30)~~ including a cellular telephone functionality for communication via a cellular communication network and having a terminal interface (32), characterized in that the mobile cellular ~~wireless~~ terminal ~~(30)~~ includes a smart card application host (34) and also a smart card router (33), the smart card router (33) responsive to a radiofrequency (RF) communication signal (RF in air) issuing from a contactless smart card reader (35), for demodulating the RF communication signal (RF in air) and providing either a demodulated communication traffic signal (S_{in}) routed to the smart card application host (34) or a demodulated communication traffic signal (U_{in}) routed to the terminal interface (32), the smart card router (33) ~~routing~~ determininged the routing based on information conveyed by the RF communication signal (RF in air).

2. (Currently amended) A mobile cellular ~~wireless~~ terminal as in claim 1, wherein the smart card application host (34) is selected from the group consisting of a contact smart card, a microcontroller residing in the mobile cellular ~~wireless~~ terminal (30), and a security component of the mobile cellular ~~wireless~~ terminal (30).

3. (Currently amended) A mobile cellular ~~wireless~~ terminal ~~(30)~~ as in claim 1, further characterized in that the smart card router (33) is also responsive to unmodulated communication traffic (S_{out}) provided by the smart card application host (34) and is responsive to unmodulated communication traffic (U_{out}) provided by the terminal interface (32), and in response to either provides a modulated communication traffic signal (RF in air) for transmission to the contactless smart card reader (35).

4. (Currently amended) A mobile cellular ~~wireless~~ terminal ~~(30)~~ as in claim 3, wherein the smart card router (33) ~~(32)~~ comprises a card access module and router (33a), a modulator/ demodulator (33b), an RF antenna (33c), and a card reader chip (33d), wherein the card access module and router (33a) is coupled to the smart card application host (34) via the card reader chip (33d) and is coupled to the terminal interface (32) and is also coupled to the RF antenna (33c) via the modulator/ demodulator (33b), the RF antenna (33c) in turn being radiatively coupled to the contactless smart card reader (35) ~~ticketing system (31)~~.

5. (Currently amended) A mobile cellular~~wireless~~ terminal ~~(30)~~ as in claim 1, further characterized in that the smart card router (33) provides logical channels (Ch1 Ch2) for communication with different applications (34-1 34-2) hosted by the smart card application host (34).

6. (Currently amended) A mobile cellular~~wireless~~ terminal ~~(30)~~ as in claim 1, further characterized in that in starting communications with the contactless smart card reader (35), the mobile cellular~~wireless~~ terminal ~~(30)~~ reports RF parameter messages in a format understandable to the contactless smart card reader (35) so as to enable the communications.

7. (Currently amended) ~~The~~ A mobile cellular~~wireless~~ terminal ~~(30)~~ as in claim 6, wherein the RF parameters so reported indicate proprietary capabilities of the smart card application host (34).

8. (Currently amended) ~~The~~ A mobile cellular ~~wireless~~ terminal ~~(30)~~ as in claim 6, wherein the RF parameters are derived from data provided by an answer-to-reset message issued by the smart card application host (34).

9. (Currently amended) A method for use by a mobile cellular

~~wireless~~ terminal ~~(30)~~ including cellular telephone functionality in communicating with a contactless smart card reader (35), the mobile cellular ~~wireless~~ terminal configured for communication via a cellular communication network and including a smart card application host ~~(34)~~ hosting at least one smart card application (34-1 34-2), the method characterized by:

a step (61) of receiving from the contactless smart card reader (35) a radiofrequency (RF) communication signal pertinent to the at least one smart card application;

a step (62) of examining so as to determine where to route the received communication signal ~~to determine where to route it,~~ including possibly routing the communication signal to the at least one smart card application (34-1 34-2) or to a terminal interface ~~(32)~~ of the mobile cellular ~~wireless~~ terminal ~~(30)~~ or to an RF antenna (33c) for radiative transmission to a system (31a 31b) related to the at least one smart card application; and

a step (63) of routing the communication signal to the destination so determined.

10. (Currently amended) A method as in claim 9, wherein the smart card application host (34) is selected from the group consisting of a contact smart card, a microcontroller residing in the mobile cellular ~~wireless~~ terminal ~~(30)~~, and a security component of the mobile cellular ~~wireless~~ terminal ~~(30)~~.

11. (Original) A method as in claim 9, further characterized in that in routing the communication signal, logical channels (Ch1 Ch2) are used for communication with different applications (34-1 34-2) hosted by the smart card application host (34).

12. (Currently amended) A method as in claim 9, further characterized in that in starting communications with the

contactless smart card reader (35), the mobile cellular ~~wireless~~ terminal ~~(30)~~ reports RF parameter messages in a format understandable to the contactless smart card reader (35) so as to enable the communications.

13. (Original) A method as in claim 12, wherein the RF parameters so reported indicate proprietary capabilities of the smart card application host (34).

14. (Original) A method as in claim 12, wherein the RF parameters are derived from data provided by an answer-to-reset message issued by the smart card application host (34).

REMARKS

The application includes claims 1-14, all of which were examined, and of which only claims 4, 5, and 11 were found to have both novelty and an inventive step (as well as industrial applicability).

With this paper, no claims are canceled or added, but the claims are changed in a way believed to overcome all grounds of rejections.

Replacement pages follow.

Examination of Claims 1-3

At section V.2 of the Written Opinion, it is asserted that Saitoh (US 5,929,414) discloses all of the limitations recited in claims 1-3, 6-10 and 12-14.

Applicant respectfully submits that the changes made by this paper to claims 1 and 9 (the only independent claims of the application) provide that claims 1 and 9 meet all the requirements for patentability, because Saitoh does not teach all the limitations of amended claims 1 and 9. Further, even if Saitoh were to be combined with another reference of which applicant is aware from prosecution of the corresponding US application mentioned above (having ser. no. 10/259,813) and Forslund et al. (US 6,250,557), these references, taken alone or in combination, do not teach, disclose or fairly suggest the claimed method and device comprising, among other things, a card access module and router, a modulator/ demodulator, an RF antenna, and a card reader chip in which the card access module and router is coupled to the smart card application host via the card reader chip and is coupled to the terminal interface and is also coupled to the RF antenna via the modulator/ demodulator the RF antenna in turn being radiatively coupled to the contactless smart card reader.

Saitoh discloses a contact/ contactless IC car and contact/ contactless terminal for reading the contact/

contactless IC card. The reader comprises a modem, which modulates and demodulates a data signal received from and sent to the contact/ contactless IC card. The reader further responds to an answer-to-reset signal as a process to identify/ detect the type of an IC card inserted in the terminal. Upon successful detection of the card type, the reader accesses/ routes incoming data signals to a corresponding process unit. However, Saitoh does not teach or suggest a mobile cellular terminal including cellular telephone functionality for communication via a cellular communication network.

Forslund teaches a cellular terminal used as mediator of smart card transaction, but lacks a smart card, smart card application host, and a smart car router as in claims 1 and 9. Thus, one of ordinary skill in the art would not have been motivated to modify the teachings of the prior art to meet the claimed limitations set forth in claims 1 and 9.

Accordingly, and in view of the amendments to the claims, applicant respectfully submits that claims 1 and 9--and so all the claims since claims 1 and 9 are the only independent claims in the case--have both novelty and an inventive step (as well as industrial applicability).

Conclusion

It is believed that all of the claims in the application meet all of the requirements for patentability, and an International Preliminary Examination Report so stating is earnestly solicited.

Respectfully submitted,

Aug. 11, 2004
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What is claimed is:

1. A mobile cellular terminal including a cellular telephone functionality for communication via a cellular communication network and having a terminal interface (32), characterized in that the mobile cellular terminal includes a smart card application host (34) and also a smart card router (33), the smart card router (33) responsive to a radiofrequency (RF) communication signal (RF in air) issuing from a contactless smart card reader (35), for demodulating the RF communication signal (RF in air) and providing either a demodulated communication traffic signal (S_{in}) routed to the smart card application host (34) or a demodulated communication traffic signal (U_{in}) routed to the terminal interface (32), the smart card router (33) determining the routing based on information conveyed by the RF communication signal (RF in air).

2. A mobile cellular terminal as in claim 1, wherein the smart card application host (34) is selected from the group consisting of a contact smart card, a microcontroller residing in the mobile cellular terminal (30), and a security component of the mobile cellular terminal (30).

3. A mobile cellular terminal as in claim 1, further characterized in that the smart card router (33) is also responsive to unmodulated communication traffic (S_{out}) provided by the smart card application host (34) and is responsive to unmodulated communication traffic (U_{out}) provided by the terminal interface (32), and in response to either provides a modulated communication traffic signal (RF in air) for transmission to the contactless smart card reader (35).

4. A mobile cellular terminal as in claim 3, wherein the

smart card router (33) comprises a card access module and router (33a), a modulator/ demodulator (33b), an RF antenna (33c), and a card reader chip (33d), wherein the card access module and router (33a) is coupled to the smart card application host (34) via the card reader chip (33d) and is coupled to the terminal interface (32) and is also coupled to the RF antenna (33c) via the modulator/ demodulator (33b), the RF antenna (33c) in turn being radiatively coupled to the contactless smart card reader (35).

5. A mobile cellular terminal as in claim 1, further characterized in that the smart card router (33) provides logical channels (Ch1 Ch2) for communication with different applications (34-1 34-2) hosted by the smart card application host (34).

6. A mobile cellular terminal as in claim 1, further characterized in that in starting communications with the contactless smart card reader (35), the mobile cellular terminal reports RF parameter messages in a format understandable to the contactless smart card reader (35) so as to enable the communications.

7. A mobile cellular terminal as in claim 6, wherein the RF parameters so reported indicate proprietary capabilities of the smart card application host (34).

8. A mobile cellular terminal as in claim 6, wherein the RF parameters are derived from data provided by an answer-to-reset message issued by the smart card application host (34).

9. A method for use by a mobile cellular terminal including cellular telephone functionality in communicating with a contactless smart card reader (35), the mobile cellular terminal configured for communication via a cellular

communication network and including a smart card application host hosting at least one smart card application (34-1 34-2), the method characterized by:

a step (61) of receiving from the contactless smart card reader (35) a radiofrequency (RF) communication signal pertinent to the at least one smart card application;

a step (62) of examining so as to determine where to route the received communication signal including possibly routing the communication signal to the at least one smart card application (34-1 34-2) or to a terminal interface of the mobile cellular terminal or to an RF antenna (33c) for radiative transmission to a system (31a 31b) related to the at least one smart card application; and

a step (63) of routing the communication signal to the destination so determined.

10. A method as in claim 9, wherein the smart card application host (34) is selected from the group consisting of a contact smart card, a microcontroller residing in the mobile cellular terminal, and a security component of the mobile cellular terminal.

11. A method as in claim 9, further characterized in that in routing the communication signal, logical channels (Ch1 Ch2) are used for communication with different applications (34-1 34-2) hosted by the smart card application host (34).

12. A method as in claim 9, further characterized in that in starting communications with the contactless smart card reader (35), the mobile cellular terminal reports RF parameter messages in a format understandable to the contactless smart card reader (35) so as to enable the communications.

13. A method as in claim 12, wherein the RF parameters so reported indicate proprietary capabilities of the smart card application host (34).

14. A method as in claim 12, wherein the RF parameters are derived from data provided by an answer-to-reset message issued by the smart card application host (34).

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